

Remarks/Arguments:

This is a reply to the office action of November 30, 2007.

Rejections under 35 USC 102

Claims 1 - 5, 10, 11 and 13 were rejected as anticipated by Ward et al.

Ward et al. does not disclose any numerical value for the functionalization of the polysaccharide and thus does not anticipate amended claim 1.

Concerning Zara et al, we note that when using a Fenton reagent in the presence of cellulose and an olefin, the generation of free radicals takes place during the entire reaction. It is true that after 50 minutes the decomposition of the Fenton reagent was completed, but it is also true that at that time the copolymerization reaction was completed. If we could take samples of the reaction as performed by Zara et al., we would measure an increasing amount of G% and a decreasing amount of Fenton reagent over time. That means that the reaction of the radical generated by the Fenton reagent takes place in the presence of the radical generation system, contrary to claim 1.

Contrary to Zara et al., all examples of the present invention are performed in two steps. In a first step, the radical on the polysaccharide is formed in the absence of the functionalized monomer, whereas in the second step, the radical reacts with the functionalized monomer, absent the radical source.

If, as in the case of Zara et al., the functionalized monomer were present with the radical source, the radical would be generated not only on the polysaccharide, but also (and sometimes predominantly) on the functionalized monomer.

In fact, Zara et al. defines the reaction as a copolymerization reaction, since the radical source starts both a polymerization process and the functionalization of the cellulose. In this respect, we note that the amount of G measured in Zara et al. is very different from the amount of functionalization as defined in amended claim 1: in Zara et al., there is no way to distinguish the amount of monomer reacted with the polysaccharide through reaction according to the second step of claim 1 from the polyvinylacetate formed by direct initiation of the Fenton reagent.

Even disregarding the presence of a radical source during the second step, amended claim 1 is novel over Zara et al. In fact, only the amount of functionalization obtained by reaction of the polysaccharide with the monomer is relevant for the assessment of novelty of claim 1. Since Zara et al. does not measure this type of functionalization, but only the change in weight deriving from both types of reactions, Zara et al. does not disclose this feature of claim 1.

Rejections under 35 USC 103

The Examiner also rejected the claims as obvious over Burke et al. in view of Kraessig and over Ward et al. in view of Demott.

Burke discloses a process for the preparation of grafted polymers. The polymers are not polysaccharides. Thus, Burke et al. differs from the present application in two technical aspects: 1) the polymers are irradiated in the presence of a compound that reacts with the generated free radical and 2) the type of polymer.

Kraessig mentions the use of radiation for creating free radicals on polysaccharides, but discourages one from using this source: "Unfortunately irradiation causes, however, also some undesirable side effects. Cellulose radicalized by irradiation is degraded by

splitting of glucosidic linkages in a disproportionation reaction ..." (page 420, first col., first paragraph).

Thus the invention recited in claims 1 - 14 would not have been obvious to the skilled person from the teachings of Burke, of Guillet and of Kraessig.

The Examiner also rejected the claims as unpatentable over the combination of Ward et al. and Demott. However, neither Ward et al. nor Demott discloses a process for the functionalization of a polysaccharide fibre according to claim 1 of the present application. As noted above, Ward et al. mention the theoretical possibility of performing the process in two steps, but they admit that in practice the process was not performed. Moreover, Demott discloses a process wherein cotton fabric is functionalized by using a conventional free-radical source. The combination of these two documents would not have led to the process of claims 1 - 14.

In addition, we note that the grafted polymer of Burke contains the monomer in an amount which is clearly greater than the range defined in amended claim 1. Consequently, even if the argument of the examiner were accepted, amended claim 1 still defines a grafted polymer whose characteristics from the polymer of Burke in terms of the ratio mol olefin/eq anhydrous glucose.

We believe that the claims as amended are patentable over the prior art of record, and that this application is now in proper condition for allowance.

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